

Mortality Pattern among Elderly Patients in a tertiary care hospital of Kolkata, India

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Abstract:

Background: India is a country currently undergoing a phase of demographic transition. Decrease in death rate due to advancing health care facilities have contributed to the aging population. The elderly age group is vulnerable period of life and has health problems and related morbidity and mortality which are very different from other age groups. The present study was conducted to study the causes of mortality among patients of elderly age group admitted to Government run tertiary level teaching hospital in Kolkata, India.

Method: The data for all the patients admitted in the hospital from January 2013 to December 2013 were obtained from Medical Records Department. Total number of patients who died from different causes were noted and sub-classified according to the cause of mortality. The percentage mortality due to different causes was calculated and analyzed.

Results: The mortality rate in elderly population was 17.3% & that in non elderly population was 7.7% which was significantly higher in elderly population statistically. CVA (32.8%) followed by CAD (14.6%) and COPD (9.5%) were the commonest disease responsible for mortality among elderly patients.

Conclusion: Elderly people should be made aware of various NCD to seek medical advice at the earliest so as to reduce the morbidity & mortality.

Keywords: Elderly, mortality, Tertiary care hospital, India

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I. introduction

Elderly or old age consists of ages nearing or surpassing the average life span of human beings. The boundary of old age cannot be defined exactly because it does not have the same meaning in all societies. Government of India adopted 'National Policy on Older Persons' in January, 1999. The policy defines 'senior citizen' or 'elderly' as a person who is of age 60 years or above¹.

The phenomenon of population ageing is becoming a major concern for the policy makers all over the world, for both developed and developing countries, during last two decades. But the problems arising out of it will have varied implications for underdeveloped, developing and developed countries.

India is in a phase of demographic transition.² Ageing of population is affected due to better education & health facilities which in turn lead to decrease in fertility and increase in life expectancy because of decreased mortality. The percentage of geriatric/elderly population (60yrs +) in India has gone up from 5.3 to 5.7 % during 1971 to 1981 and 6.7 to 8.3 % respectively during 1991 to 2013.³ It is projected to rise to 12.4% of population by the year 2026². Thus India has acquired the label of "an ageing nation".²

For a developing country like India, this may pose mounting pressures on various socio economic fronts including pension outlays, health care expenditures, fiscal discipline, savings levels etc. Again this segment of population faces multiple medical and psychological problems.

There is an emerging need to pay greater attention to ageing-related issues and to promote holistic policies and programmes for dealing with the ageing society.

Previously the causes of death was primarily due to communicable diseases, but there is a transition from communicable to non communicable diseases as a cause of death. Understanding the mortality pattern help to plan for service. In this background the present study was conducted to analyze the causes of mortality among Elderly population admitted to a government run tertiary level teaching hospital in Kolkata, India.

II. Materials and methods

This retrospective record based descriptive study was conducted in R G Kar Medical College & Hospital, a tertiary level teaching hospital in Kolkata, West Bengal, India. All the elderly patients admitted in the year 2013 were included in this study. As per the data available from the medical record section a total of

15226 Elderly patients were admitted to the hospital during 2013. Only those patients who were alive at the time of admission were included in the study & those brought dead were excluded because they were sent for post mortem examination to ascertain the cause of death and cause was not present in death record book. After proper approval from the authority data collection was done from the record kept at Medical record section of the college. Death record book for the year 2013 was used to collect information about the above study. All the data collected were entered in MS Excel spread sheet. Frequency & percentages were calculated. Chi square test was performed to see the statistical significance.

III. Results

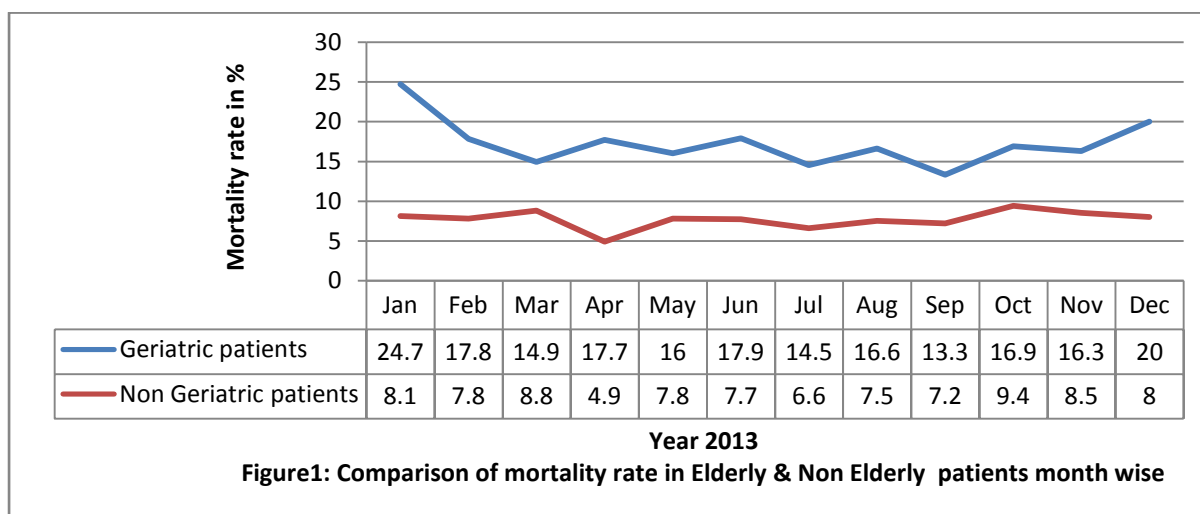
During the year 2013 total number of admissions in the hospital was 78194 out of which 15226 (19.5%) were in the Elderly (≥ 60 years) & 62968 (80.5%) were in non Elderly age group. Among the admitted elderly patents 9214 (60.5%) are male & 6012 (39.5%) are female. Total number of deaths occurring in the hospital during the same period was 7490 out of which 2639 were in elderly age group accounting for 35% of the total hospital death. The age of 60yrs & above was included in the elderly age group and those below 60 yrs were included in non elderly age group as per National Policy on Old age.

Table1: Distribution of Elderly mortality according to age & sex (N=2639)

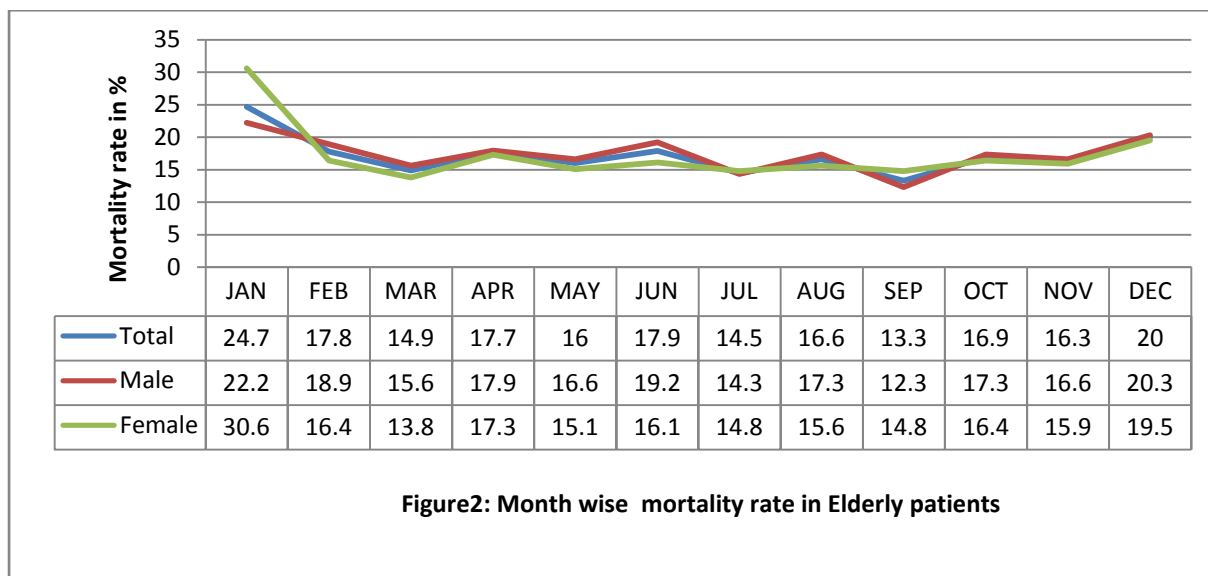
Age group (yrs)	Male	Female	Total
60-69	724 (27.4%)	420 (15.9%)	1144 (43.3%)
70-79	607 (23%)	351 (13.3%)	958 (36.3%)
≥ 80	284 (10.8%)	253 (9.6%)	537 (20.4%)
Total	1615 (61.2%)	1024 (38.8%)	2639 (100%)

61.2% of the elderly death was male & 38.8% were female. Majority (43.3%) of the death were in the age group of 60-69 yrs.

There were 5 patients above the age of 100 yrs. The highest age was 103 yrs -a Hindu female. Religion wise Muslim comprised 267 (10.1%); Hindu comprised 2371 (89.9%). There was only one Christian patient.



The mortality rate in elderly population (17.3%) as compared to non elderly population (7.7%) was significantly higher statistically (chi-square value (Yale's correction)= 1311.242, df=1 & p value <0.001). The mortality rate in Elderly age group was higher in the month of Jan & Dec. It was contributed by increased number of death due to Coronary artery Disease(CAD), Cerebro Vascular Accident (CVA) & Chronic Obstructive Pulmonary Disease(COPD). Similarly the mortality rate in non elderly age group was highest in the month of Oct & it was contributed by highest neonatal death in that period of the year.



The overall mortality rate in Elderly patients was 17.3% annually. It was 17.5% in male & 17% in female patients. It was higher in both the sex during the month of January (24.7%) & December (20%) when compared to other months of the year. This was due to increased number of death due to CAD, CVA & COPD.

Causes of death in Elderly patients according to ICD-10.

The cause of death was ascertained from the underlying cause of death mentioned in death certificate

Table 2: Proportional mortality from diseases as per ICD-10 classification in Elderly patients.

Diseases	Number	percentage
Blood disorder	3	0.1
Circulatory system	1383	52.4
Congenital anomalies	4	0.15
Connective tissue	1	0.05
Digestive system	157	6
Endocrine	181	6.8
External cause	31	1.2
Genito urinary	158	6
Infection	131	5
Injury	37	1.4
Neoplasm	152	5.8
Nervous system	38	1.4
Nutritional	26	1
Poisoning	3	0.1
Respiratory system	334	12.7
Total	2639	100

The most common cause of death in elderly patients is from Circulatory system diseases (52.4%) out of which CAD (14.6%) & CVA (32.8%) are the predominant cause.

Table 3: Proportional mortality in different condition(N=2639)

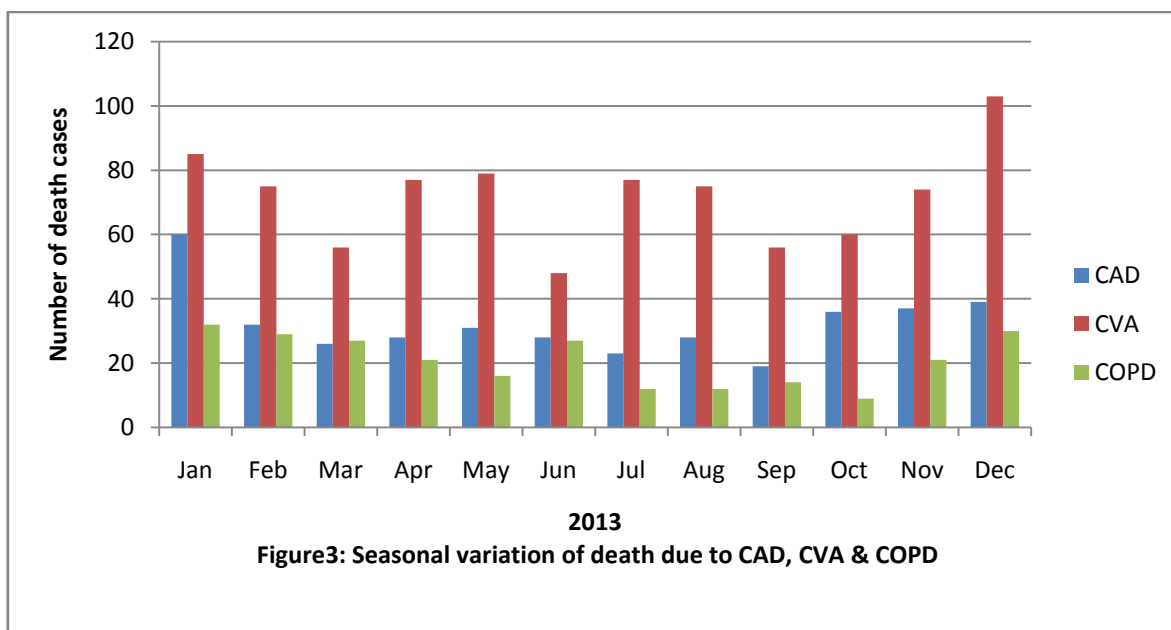
Disease	Number	Percentage
CAD	387	14.6
COPD	250	9.5
CKD	133	5.0
CVA	865	32.8
Diabetes mellitus	177	6.7
Infection	131	5.0
Neoplasm	152	5.8
Others	544	20.6
Total	2639	100

Individual disease wise the most common cause of death in elderly patients admitted to the hospital was CVA (32.8%) followed by CAD (14.6%) & COPD (9.5%).

Mortality from Neoplasm

The most common type of neoplasm as a cause of death in elderly patients was carcinoma lung (23.7%) followed by carcinoma stomach (9.9%). There was about (9.2%) of undiagnosed malignancies as a cause of death.

Fig 3 showed the seasonal variation of death due to CAD, CVA & COPD- the three most common cause of death in elderly patients.



The leading cause of death in elderly patients was CVA followed by CAD & COPD. All these 3 diseases have highest mortality in the month of January & December.

Table 4: Distribution of deaths according to time interval between admission & death.

Time interval	Number	Percentage
< 24 hrs	580	22.0
1-3 days	1117	42.3
4-7 days	533	20.2
≥8 days	409	15.5
Total	2639	100

Out of all death in elderly patients 64.3% occurred within 3 days of admission, out of which 22% occurred on the day of admission which implies that they came to the hospital in very late stage of the disease.

IV. Discussion

Of the total admissions elderly population comprised 19.5% in this study which is consistent with a study conducted in a tertiary care hospital in Delhi by Giri in 2008⁴ where it was 19%. Hospital mortality rate of 9.5% in this study is similar to the findings of the same study where it was 8.9%. The percentage share of death by elderly population in this study was 35% which is quite different from the findings of other studies like a study conducted in Chandigarh by Bhatia et al in 2006⁵ & a study in a tertiary hospital of Solapur by Godale⁶ which was 20% in both.

Mortality rate of elderly & non elderly population was 17.3% & 7.3% respectively in this study which was again consistent with the findings of the study by Giri⁴ where it was 14.3% & 7.65% respectively. The cause of mortality was more due to non communicable diseases in the present study and this pattern was consistent with other studies.^{7,8} Similar trend has also been reported from other developing countries also. A study from Nigerrria by Adeolu et al⁹ reported more non communicable diseases. Another study from Nigeria by Adebuseye et al¹⁰ has the same observation.

The non communicable diseases has a long latent period. As the life expectancy has increased, people are also exposed to the risk factors of different non communicable diseases for long years. So, to control the mortality from non communicable diseases in old age, we have to change the life style and reduce the exposure to different risk factors of non communicable diseases.

The major causes of death in elderly patients were CVA (32.8%), CAD (14.6%) & COPD (9.5%) in this study which is different from the study by Giri⁴ where CAD (33.6%) & COPD (24.7%) were the leading

causes. Non communicable diseases was leading cause of death not only in elderly population, but it was also the leading cause of mortality in adult population of all ages. This has been reported by Kauser et al¹¹ in their study from South India. According to Government of India statistics, cardiovascular disorders account for one-third of elderly mortality, respiratory disorders account for 10% mortality & neoplasm accounts for 6%³ where in our study showed similar results in death due to COPD (9.5%) & neoplasm (5.8%).

Limitations

The limitation of this study is that it was a single centre tertiary hospital based study where people from different catchment area comes for treatment, which was not a reflection of death in the community where many death takes place at home & other institutions. More over the immediate & the associated cause of cause of death is not mentioned in many death certificates which should have been as per WHO recommendations.

V. Conclusion

With better education, health services & economic growth the longevity of people has increased leading to rising elderly population. Mortality in elderly population was significantly greater than non-elderly population. Age related physiologic changes, decreased self care and socio-economic insecurity all play a significant role in this. NCD like CVA, CAD & COPD are the leading causes of death in this age group followed by diabetes mellitus & neoplasm. Majority of the deaths occurred within 72 hrs of admission implying that they reach tertiary health care institution in late condition. This situation can be avoided by implementation of geriatric care at primary & secondary level health care institution close to their home.

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